We claim:

1. A method of treating arthritis comprising:

a) generating a recombinant viral or plasmid vector comprising a DNA sequence encoding a member of a transforming growth factor superfamily of proteins operatively linked to a promoter;

b) transfecting *in vitro* a population of cultured connective tissue cells with said recombinant vector, resulting in a population of transfected connective tissue cells; and

c) transplanting said transfected connective tissue cells by intraarticular injection to an arthritic joint space of a mammalian host, such that expression of said DNA sequence within said joint space results in regenerating connective tissue.

2. The method of claim 1, wherein said recombinant viral vector is a retroviral vector.

3. The method of claim 1, wherein said recombinant vector is a plasmid vector.

4. The method of claim 1, wherein said population of transfected connective tissue cells are stored prior to transplantation.

5. The method of claim 4, wherein said population of transfected connective tissue cells are stored in 10% DMSO under liquid nitrogen prior to transplantation.

6. The method according to claim 1, wherein said connective tissue cells are fibroblast cells, mesenchymal cells, osteoblasts, or chondrocytes.

7. The method according to claim 6, wherein in said fibroblast cells, the fibroblast cells are NIH 3T3 cells or human foreskin fibroblast cells.

8. The method according to claim 1, wherein said connective tissue is a cartilage, ligament, or tendon.

9. The method according to claim 8, wherein in said cartilage, the cartilage is hyaline cartilage.

10. The method according to claim 1, wherein said member of the transformation growth factor superfamily is transforming growth factor β (TGF-β).

11. The method according to claim 1, wherein said member of the transformation growth factor superfamily is TGF-β1, TGF-β2, TGF-β3, BMP-2, BMP-3, BMP-4, BMP-5, BMP-6, or BMP-7.

12. The method according to claim 10, wherein said TGF-β is human or porcine TGF-β1, TGF-β2 or TGF-β3.

13. A method of regenerating hyaline cartilage, comprising:

a) generating a recombinant viral or plasmid vector comprising a DNA sequence encoding a member of a transforming growth factor superfamily of proteins operatively linked to a promoter;

b) transfecting *in vitro* a population of cultured connective tissue cells with said recombinant vector, resulting in a population of transfected connective tissue cells; and

c) transplanting said transfected connective tissue cells by intraarticular injection to joint space of a mammalian host, such that expression of said DNA sequence within said joint space results in regenerating hyaline cartilage.

14. The method of claim 1, wherein said transfection is accomplished by liposome encapsulation, calcium phosphate coprecipitation, electroporation and DEAE-dextran mediation.

15. The method of claim 3, wherein said plasmid is pmTβ1.

16. A connective tissue cell line comprising a recombinant viral or plasmid vector comprising a DNA sequence encoding a member of the transforming growth factor superfamily.

17. The connective tissue cell line according to claim 16, wherein said connective tissue cell line is a fibroblast cell line, a mesenchymal cell line, a chondrocyte cell line, an osteoblast cell line, or an osteocyte cell line.

18. The connective tissue cell line according to claim 17, wherein in said fibroblast cell line, the fibroblast cell line is human foreskin fibroblast cell line or NIH 3T3 cell line.

19. The connective tissue cell line according to claim 16, wherein said member of the transforming growth factor superfamily is TGF-β.

20. The connective tissue cell line according to claim 16, wherein said member of the transforming growth factor superfamily is TGF-β1, TGF-β2, TGF-β3, BMP-2, BMP-3, BMP-4, BMP-5, BMP-6, or BMP-7.

21. The connective tissue cell line according to claim 19, wherein said TGF-β is human or porcine TGF-β1, TGF-β2 or TGF-β3.

22. The connective tissue cell line according to claim 16, wherein said recombinant vector is pmTβ1.